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PUBLIC HEALTH REPORTS

VOL. 36 SEPTEMBER 23, 1921 No. 38

SYPHILIS AND INFANT DEATHS.[1]

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When babies that are born alive die before reaching the age of 1 year, their deaths are classed as infant deaths. The number of such deaths for each 1,000 living births is spoken of as the infant mortality rate. When babies are born dead, such events are recorded as stillbirths and not as births and deaths. Stillbirths are not included in infant mortality. Miscarriages that occur too early to be classed as stillbirths are not recorded at all. While this article is concerned primarily with infant deaths under 1 year of age, mention will also be made as occasion requires of stillbirths and miscarriages.

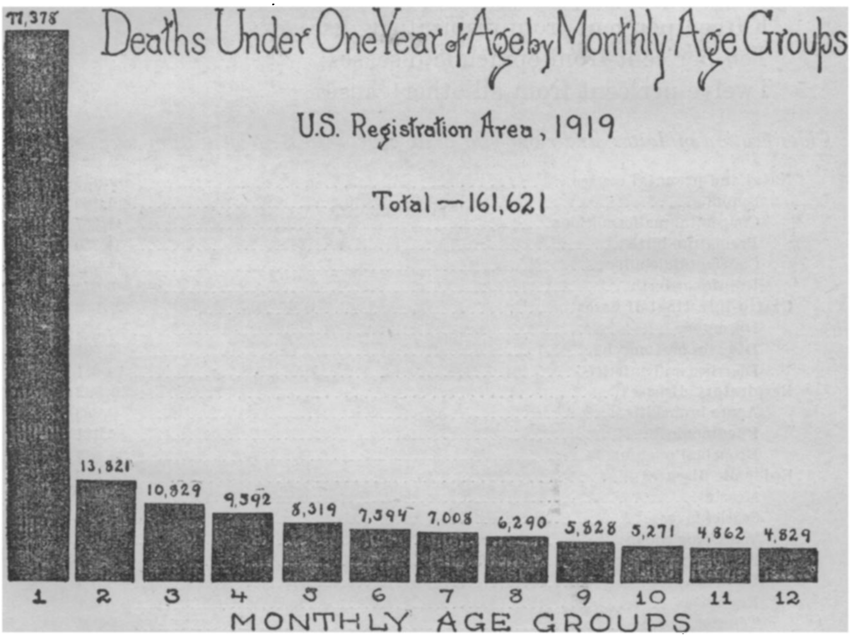

FIG. 1.

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[1] This article originally appeared in The Health Bulletin, published by the North Carolina State Board of Health, June, 1921, pp. 9-14, and is reprinted here by permission.

By reference to Figure 1 it will be noted that approximately 48 per cent of all deaths under 1 year of age in the registration area for 1919 occurred during the first month of life. In 1916 about 46 per cent of all such deaths occurred during the first month. At this early period death is due chiefly to prenatal causes. As progress is made in controlling preventable causes of infant death, such as gastro-intestinal diseases, it is to be expected that the percentage of such deaths due to prenatal causes will show an increase. Such an increase in percentage will serve to focus attention upon the problem of preventing death from prenatal causes.

In this connection it is instructive to group all deaths under 1 year in a few simple groups (Fig. 2 and table) as to cause. If this be done with such deaths in the registration area for 1919 and the result expressed as a percentage of the whole number of infant deaths, we have the following:

Forty-three per cent from natal and prenatal causes;
Twenty per cent from gastro-intestinal diseases;
Fifteen per cent from respiratory diseases;
Ten per cent from epidemic diseases;
Twelve per cent from all other causes.

Classification of deaths under one year as to cause—U. S. Registration area, 1919.

Natal and prenatal causes	**69,035**
Syphilis	1,869
Congenital malformations	11,357
Premature births	34,750
Congenital debility	14,784
Injuries at birth	6,275
Gastro-intestinal diseases	**33,116**
Dysentery	834
Diseases of stomach	2,321
Diarrhea and enteritis[1]	29,961
Respiratory diseases	**23,562**
Acute bronchitis	3,388
Pneumonia	6,121
Bronchial pneumonia	14,053
Epidemic diseases	**15,715**
Measles	824
Scarlet fever	108
Whooping cough	2,606
Diphtheria and croup	846
Influenza	8,094
Erysipelas	701
Tetanus	393
Tuberculosis of the lungs	872
Tuberculous meningitis	961
Other forms of tuberculosis	310
All other causes	**20,193**
Meningitis	1,326
Convulsions	1,775
Organic diseases of the heart	586
External causes	1,933
Unknown or ill-defined diseases	6,582
All other causes	7,991

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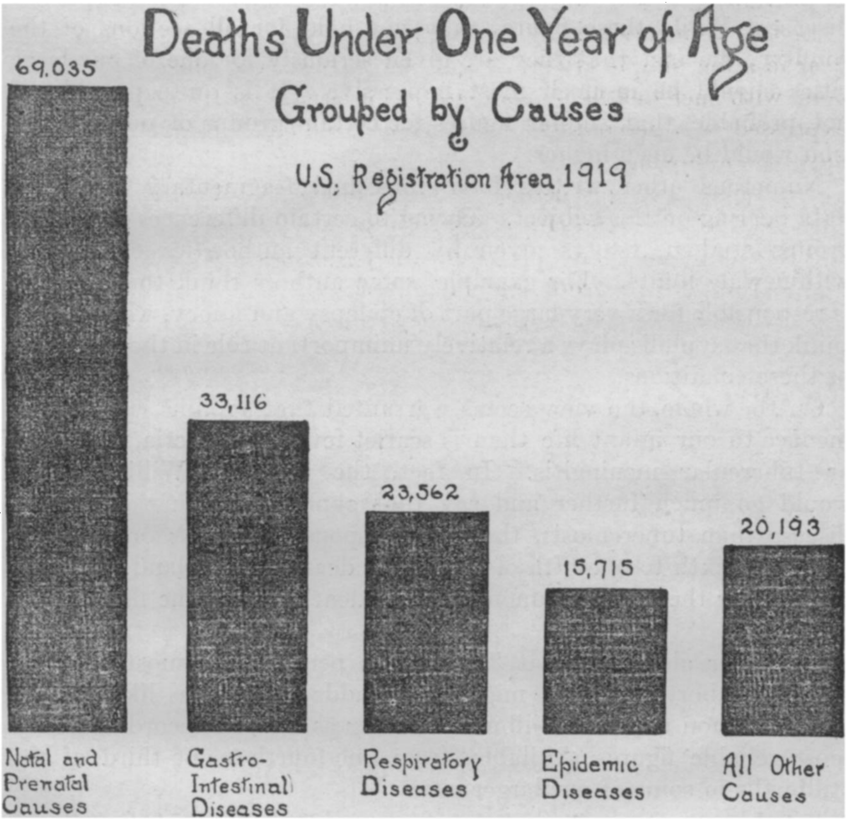
[1] Under two years.

Thus it appears that natal and prenatal causes are responsible for more than twice as many deaths under 1 year as any other cause group. This point is shown graphically in the accompanying chart. Natal and prenatal causes include syphilis, congenital malformations, premature birth, congenital debility, and injuries at birth. Syphilis is given as a cause of death in comparatively few instances. It is known, however, that syphilis is an important factor in premature birth and congenital debility, which together are recorded as one of the chief causes of death under 1 year of age. Our knowledge concerning the exact number of such deaths for which syphilis is responsible is far from complete. Statistical data bearing on this subject are fragmentary and have often been compiled by a study of special groups that may not at all be representative of the general population. For this reason it is very difficult to reach general conclusions that are justified by the information available.



Dr. P. C. Jeans, of St. Louis, has made a careful study of the problem and gives us a few conclusions to which his studies have led him. For example, he thinks that about 10 per cent of all marriages involve a syphilitic individual, and that about 75 per cent of the offspring from such families are infected. Dr. Jeans is also of the opinion that in syphilitic families the waste of life due to stillbirth and miscarriage is about three times the waste in nonsyphilitic families, and that the infant mortality rate among the babies born alive is about twice as great in syphilitic as in nonsyphilitic families.

In concluding his statistical data, Dr. Jeans estimates that about 5 per cent of our infant population are syphilitic, and says that about 3½ per cent of all infant deaths in St. Louis are ascribed to this disease. While these figures may not hold for all sections of the country, the fact that they are given seriously for one of our large cities should be in itself most impressive. It is quite possible, if not probable, that similar figures for certain groups of our population would be even higher.

Numerous other writers have furnished fragmentary statistical data bearing on this subject. Owing to certain differences in various groups studied, figures given by different authorities often vary within wide limits. For example, some authors think that syphilis is responsible for a very large part of epilepsy and idiocy, while others think that syphilis plays a relatively unimportant rôle in the causation of these conditions.

On the whole, the view seems warranted that syphilis is a greater menace to our infant life than is scarlet fever, diphtheria, influenza, or tubercular meningitis. In fact, the late Dr. William Osler would go much further and say that syphilis is a more common disease than tuberculosis, that it is responsible, in his opinion, for from one-sixth to one-fifth of the infant deaths in England, and that it is by far the most common cause of death during the first month of life.

Dr. Osler also says that "syphilis is perhaps the most common cause of abortion." He might have added that it is likewise the most common cause of stillbirth, causing as it does, according to the most reliable figures available, from one-fourth to one-third of the stillbirths in some of our larger cities.

Let me repeat again that not too much reliance is to be placed upon the general application of any figures given in connection with the prevalence of syphilis or the havoc wrought by its ravages. A figure indicating the prevalence of syphilis among one group of people may not be at all applicable to another group; and, on the whole, the data are so fragmentary that general conclusions with respect to prevalence of syphilis and the damage it is doing are little more than shrewd guesses based on what information is available.

We may be sure, however, that syphilis is an important cause of infant death as well as of miscarriage and stillbirth. We may be sure also that the essential factors in preventing syphilis among children are the discovery and proper treatment of adult carriers of the disease. Of course it is important to treat children who are infected; but since it is the infected adult and not the infected child who spreads syphilis, it is especially important that the infected adult be treated in order to prevent further spread of the disease.

Treatment is a more important factor in the prevention of syphilis than in the prevention of most other communicable diseases. The reason for this is apparent when it is considered that untreated cases of syphilis are thought to remain contagious or communicable for a period of four or five years, while prompt treatment when the first stage of the disease appears will cause all germs of syphilis to disappear from the lesions within a few hours and thus remove the danger of transmitting the infection to others.

It must not be thought, however, that the patient is cured when the germs have disappeared from the lesions and the lesions have healed. Experience has shown that even with our modern method of treatment it is necessary to keep a syphilitic patient under treatment for a long period of time after all signs and symptoms of the disease have disappeared, in order to guard against recurrence. Treatment is usually given in "courses" alternating with periods of rest. A "course" of treatment consists of several doses of medicine given at regular intervals, followed by a period of rest and later by another course of treatment. It is not possible for patients suffering from syphilis to treat themselves. One of the drugs necessary in the treatment of syphilis must be injected directly into a vein. Only a skilled physician can administer a drug in this way.

In order that all infected persons may receive proper treatment, it is necessary that such persons realize the necessity for treatment both for their own sake and for the sake of the public. While a few cases may be discovered by health officials and placed under treatment, the great majority must seek medical advice of their own accord if they are to receive proper treatment. It is important, therefore, that an educational campaign be conducted by the health authorities, with a view to inducing all infected persons to seek treatment at the very earliest possible moment. The public must be told the why and wherefore of the necessity for seeking treatment if full cooperation is to be expected. They must know certain things in regard to medical aspects of the syphilis problem, and must learn to evaluate the various activities directed toward prevention. Some of the things that should be recognized and appreciated by the public may be enumerated categorically as follows:

1. It is important that adequate medical service be available in all parts of the State. By this I mean that there should be enough medical practitioners with special knowledge of the diagnosis and

treatment of syphilis so distributed over the State as to be accessible to all infected persons. As a matter of public economy, it is preferable, where possible, that infected persons be treated as private patients who pay for their own treatment. When necessary to protect the public health, infectious patients should be treated at public expense. In North Carolina the responsibility for such treatment is placed by law upon the county.

2. When one member of a family is found to be syphilitic, it is desirable to have other members of the family examined for possible syphilis. This should apply to both old and recent infections where there has been a possible chance for transmission of the disease either by contact or inheritance. It should be remembered that syphilis is syphilis when it occurs as paresis, locomotor ataxia, syphilis of the blood vessels, or other late manifestation of the disease, just the same as if the infection were recently acquired. Syphilis may be transmitted to other members of the family as an inheritance or by accident. It is for this reason that other members of the family of such a patient should be examined for evidence of syphilis.

3. So much emphasis has been placed on the Wassermann test that the public is apt to acquire a distorted view of its value. It should be understood that the meaning of the Wassermann test depends quite largely upon the technique and care used by the laboratory where it is performed. Where the test is accurately adjusted to conservative technique and performed with great precision and care as in the State Laboratory of Hygiene, a positive Wassermann nearly always means syphilis. In laboratories where less conservative technique is employed, the meaning of a positive Wassermann is less definite. In any case a negative Wassermann does not exclude syphilis. A certain number of active cases of syphilis in the third or tertiary stage will give negative Wassermanns. This is especially true if the cases have had partial antisyphilitic treatment and have relapsed because the treatment was not completed. The Wassermann test is valuable as an aid to diagnosis and also as a guide to treatment, but the interpretation of its meaning should not be attempted by a person other than a physician. It is often difficult enough for a physician to estimate accurately the worth of a Wassermann test. Certainly such estimates can not be made by a person without special knowledge of the subject.

4. It has been pointed out that syphilis may be the cause of miscarriage, stillbirth or of early death from congenital debility, or premature birth. These conditions are so frequently due to syphilis that it is believed advisable to examine the parents for syphilis and test their blood by the Wassermann method in all such cases. As pointed out in the preceding paragraph a few cases of active syphilis will be missed by the Wassermann test, but carrying out the pro-

cedure here recommended will result in discovering a syphilitic cause in a large number of cases where it exists and thus permit giving specific treatment.

5. It is so important to protect the unborn child from syphilis that if one accepts at its face value the statement that 10 per cent of married women are syphilitic it might be worth while to consider the feasibility of a routine Wassermann test for all pregnant women. Certainly wherever such a woman has a history of previous miscarriage or there is other reason for suspecting syphilis, both a clinical examination and a Wassermann test should be made. In all cases where syphilis is discovered in a pregnant woman, vigorous treatment should be given. The best way to treat a syphilitic child is to treat the mother before the child is born.

6. As a general measure of protection for future children, all cases of venereal sore should be given very careful attention. It is now possible by means of the "dark field" method of examination to find the germs of syphilis even in the first sore of the disease. Thus it is possible by this method to make the diagnosis of syphilis with absolute certainty before the Wassermann reaction becomes positive, and treatment begun at this early stage is much better for both patient and the public. For the patient it insures speedy recovery with less prolonged treatment than would otherwise be required. For the public it affords a safeguard by cutting short the period during which the patient is capable of transmitting infection. It is for these reasons that "dark field" examinations should be made on all venereal sores in order to distinguish chancre from chancroid. Chancre is the first sore of syphilis, whereas chancroid is merely a local ulcer. No medicine that might kill the germs should be used on any suspicious sore before making such an examination in search of the germs. If the first examination is negative, repeated examinations should be made before deciding that a sore is chancroid.

7. Let me emphasize again the necessity for thorough treatment of syphilis. When a patient begins to feel better there is a disposition to become careless about returning for treatment. This is a dangerous thing to do because a case of syphilis is usually much more difficult to treat after relapse than at first. Ehrlich, the man who discovered arsphenamine (the new name for salvarsan or "606"), once hoped that a single dose of the drug would destroy all germs of syphilis in the patient's body and thus effect a cure. We now know that such is not the case. Not only does it require repeated doses but it requires repeated courses of doses to be sure of a cure of syphilis. If treatment is begun in a very early stage of the disease, a speedier cure may be expected than if treatment is begun later. When treatment is not begun until the rash appears on the body, the courses of

treatment with alternating periods of rest must be kept up for a period of two or three years in order to insure against relapse. Even then it is important that the patient remain under observation of the physician for a period of years, reporting at stated intervals for examinations and tests. Owing to the importance of early treatment and of thorough treatment for syphilis, it is desired to especially emphasize these two points to the end that people who become infected may seek treatment early and may remain under treatment for a sufficient period of time to insure permanent results.

In conclusion it has been shown that syphilis is an important, though not accurately measured, factor in the waste of infant life, especially before birth and during the first month after birth. This king among diseases that ranks with tuberculosis as a cause of death is unique in the destructive force it carries to the next generation with such havoc to unborn and new-born children. If the germ plasm of the race is to be protected against its ravages, it is necessary to direct attention toward the prevention of syphilis. The prevention of the unnecessary waste of infant life caused by syphilis is possible only by limiting the prevalence of the disease itself. Since syphilis is spread chiefly by adults, it follows that the prevention of syphilis among infants and children requires that syphilis be prevented among adults. Attention must be given to the adult carrier. The essential elements in the program of prevention are the early diagnosis and the vigorous treatment of existing cases extended for a sufficient length of time to insure against relapse. In order that unfortunate victims of the disease may be led to seek early treatment, and to continue treatment sufficiently long, there must be a widespread diffusion of information concerning the necessity for such early and prolonged treatment for the protection of both the victim and his offspring.

ANTITYPHOID VACCINATION.[1]

By THOMAS G. HULL, Ph. D., Chief Division of Laboratories, Illinois State Department of Public Health.

It is quite a well-known fact that one attack of typhoid fever usually renders an individual immune to subsequent attacks of the disease. Advantage is taken of this phenomenon by injecting dead typhoid bacilli into well persons, thus setting up within the body a series of processes not unlike those which take place in an attack of typhoid fever, but without the attending discomfort and danger of the disease itself. This is antityphoid vaccination. The process is harmlesss since the injected typhoid bacteria are dead; the immunity established, while not as great nor as lasting as that raised by an

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[1] This article originally appeared in the Illinois Health News for August, 1921, and is reprinted here by permission.